(No Model.) 3 Sheets—Sheet 1.

A. O'NEILL.

STEAM WASHER.

No. 261,170. Patented July 18, 1882.

Fig. 1.

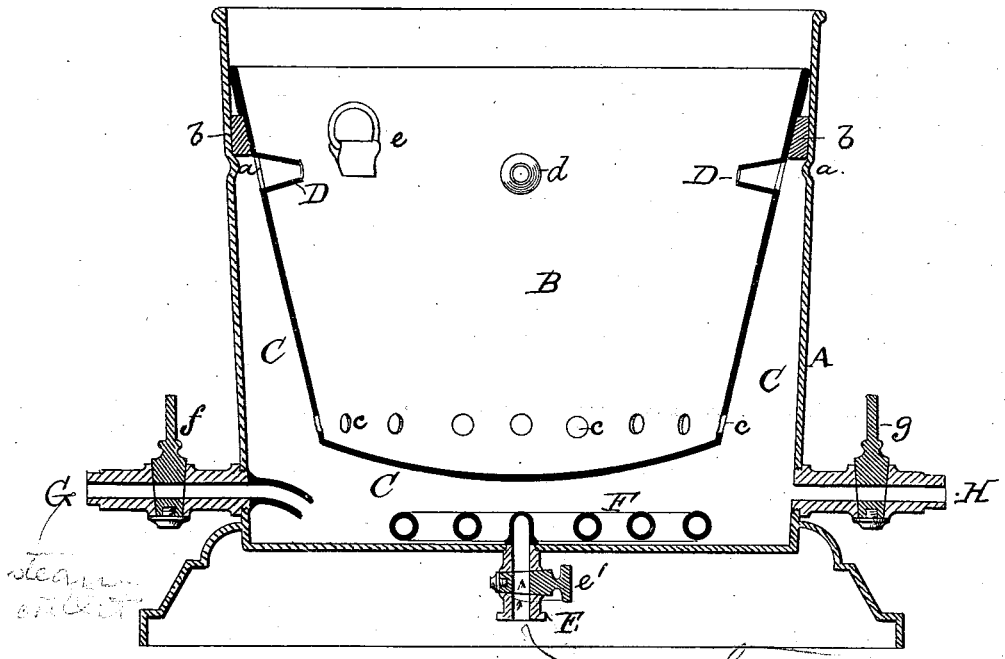
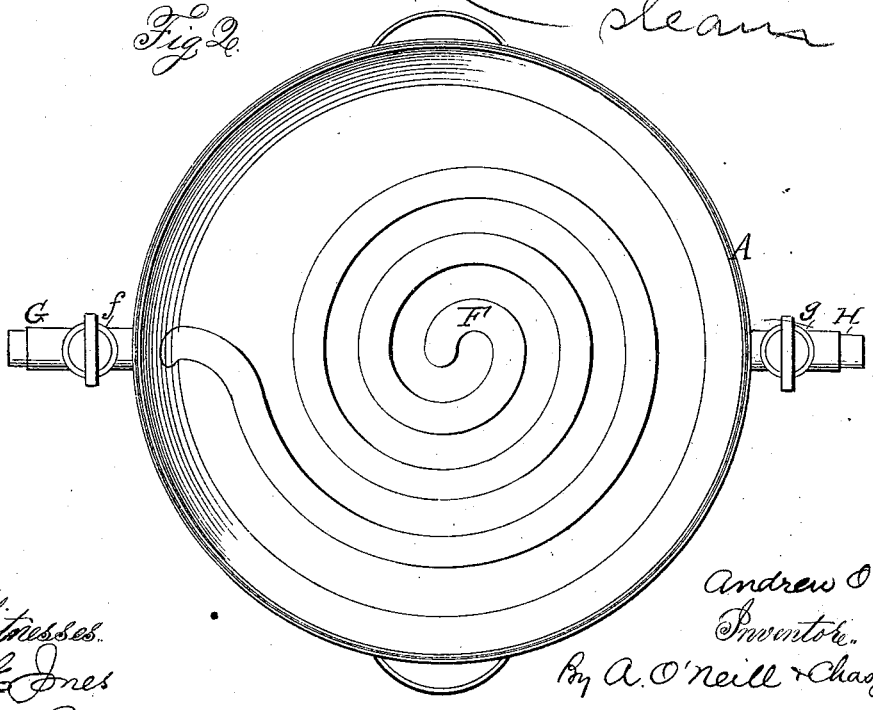


Fig 2.



Witnesses.
C. E. Jones
Robt Brown

Andrew O'Neill
Inventor.
By A. O'Neill & Chas J. Gooch
Atty

(No Model.) 3 Sheets—Sheet 2.

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Fig. 3.

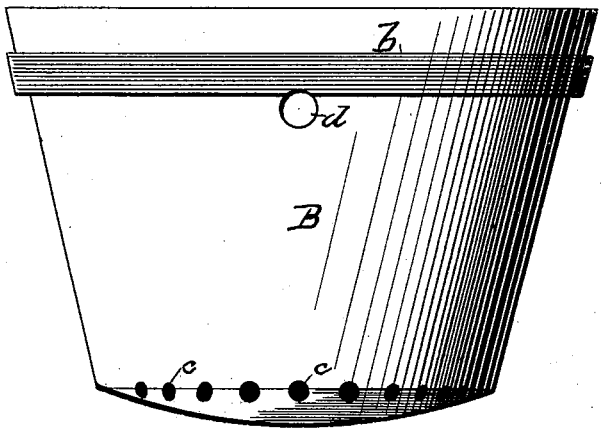
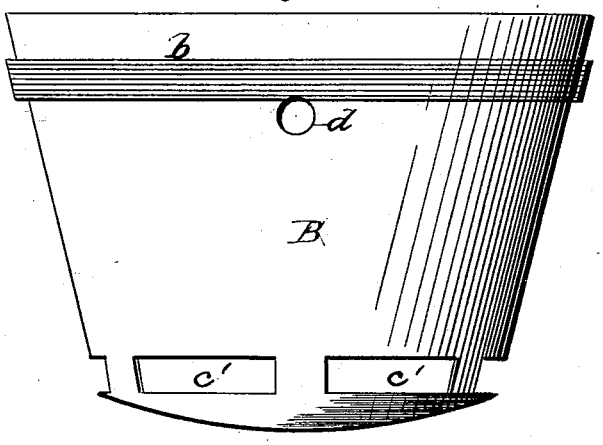


Fig. 4.



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(No Model.) 3 Sheets—Sheet 3.

A. O'NEILL.

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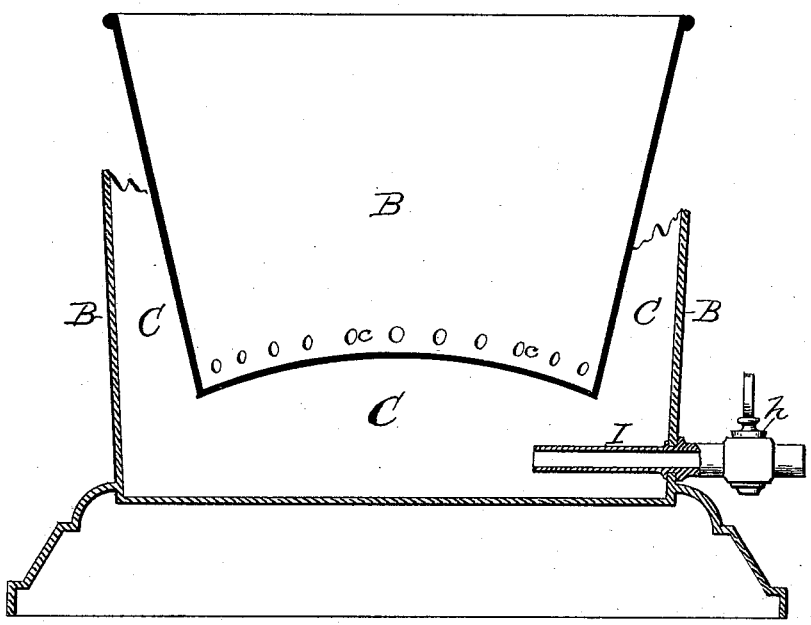
Fig. 5.



Witnesses
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UNITED STATES PATENT OFFICE.

ANDREW O'NEILL, OF NEW HAVEN, CONNECTICUT.

STEAM-WASHER.

SPECIFICATION forming part of Letters Patent No. 261,170, dated July 18, 1882.

Application filed October 8, 1881. (No model.)

To all whom it may concern:

Be it known that I, ANDREW O'NEILL, a citizen of New Haven, residing at New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Steam-Washers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention consists in certain improvements, as hereinafter described and claimed, on the wash-boiler for which Letters Patent were granted to me on the 11th August, 1868, No. 80,995.

Referring to the drawings herewith, Figure 1 represents a vertical section, and Fig. 2 a plan, of my complete device. Figs. 3 and 4 represent in elevation different forms of removable inner boiler; and Fig. 5 is a vertical section, partly broken away, of a modified construction of the device.

A represents an outer boiler, having near its top an inwardly-projecting ridge, *a*, upon which rests the gasket *b*, secured to or carried by the inner boiler, B, for the purpose of suspending said inner boiler within the outer boiler, so as to leave an annular space, C, between the two boilers, and also to form a tight joint at that part where the gasket binds against the sides, as shown in my before-mentioned patent. The bottom of the boiler is imperforate, and is provided a short distance above the bottom with a series of perforations, *c*, after the manner shown in the above patent; or it may have a series of larger openings, as shown at *c'*.

In place of providing the apertures at the upper part of the boiler B with hoods, as heretofore, I furnish the same with inwardly-projecting radiating tubes D. The advantage secured by this change is that as the heated water ascends it passes through said tubes and is projected therefrom down and onto the clothes in the center or near the center of the boiler B, instead of dropping down near the sides, as is the case where hoods unprovided with a bottom piece to convey the water away from the sides of the boiler are used. *d* represents the openings provided with the tubes D. *e* is a ring, of which there are several, secured to the inner boiler, B, to allow of its being readily lifted out from within the boiler A.

In my heretofore-referred-to boiler the outer boiler was designed to be placed upon or within a stove or in direct contact with the fire. In my present construction the water contained within the outer boiler, and which circulates therefrom to and through the clothes in the inner boiler, is heated by means of superheated steam, which is generated in a boiler or other suitable generator, and passes from thence through a pipe, E, having a cock, *e'*, for regulating the passage of steam therethrough. This pipe E passes through the bottom or side, as desired, of the outer boiler, and either circulates around the lower part thereof in the form of a coil, F, or of zigzag, straight, or any other desired form. This pipe continues out to and through the side of the outer boiler, as shown at G. The steam, after traversing the coil or other pipe, F, passes out therefrom through the pipe G, from whence it may be discharged to the atmosphere, if desired; but I contemplate conveying it by means of a suitable extension of such pipe to other wash-boilers placed in juxtaposition to the one described; or said steam may be further utilized either by conveying it to steam registers or heaters for the purpose of warming rooms or in various other ways. The cock *f* regulates the exit of the steam from the pipe G.

H represents a pipe, guarded by a cock, *g*, communicating with an opening in the lower part of the outer boiler, and through which the dirty water is discharged when it is desired to cleanse said boiler.

In Fig. 5 I have shown so much of the inner and outer boilers as will serve to illustrate a modified form of construction. In this case the superheated steam is admitted through the pipe I and discharged within the outer boiler directly in contact with the water in the annular space surrounding the inner boiler. A cock, *h*, affords means for regulating the admission of the steam and graduating its expansive force, so that it shall never be in excess of requirement.

The operation is as follows: A sufficient quantity of water is placed in the outer boiler,

B, the clothes to be washed are, with the necessary soap or other cleansing agent, placed in the inner boiler, A, and steam is then admitted through the pipe E to the coil or pipe F. The heat evolved from the pipe or coil F will heat the water, and the continued admission of steam will create a vacuum in that portion of the boiler in which said pipe or coil is situated and cause the heated water to ascend on either side of the inner boiler, between the walls of the two boilers, until it reaches the openings *d*, through which the continued upward pressure will force it onto and through the clothes. This water will by its own gravity, aided by the pressure of the steam following it and the pressure of the atmosphere, be forced out through the opening *c*, near the bottom of the inner boiler, when it will be again reheated and forced upward in a continuous current to and through the openings *d*, and so on, this operation being continuous as long as the superheated steam is admitted to the coil or pipe F.

By the arrangement above described I secure the advantage of two forces or agencies in cleansing clothing—viz., the atmospheric pressure, which naturally compresses the hot suds downward through the clothing to be cleansed, and out at the openings near the bottom of the inner boiler, and the artificial pressure, consisting of the steam passing through the coil or directly into the water, which boils the water and forces it upward to and through the perforated upper portion of the inner boiler. These operations being continuous as long as the steam is allowed to enter the outer boiler, I thereby secure a greatly-improved automatic washer, in which a continuous current is passed through the clothes and their thorough cleansing insured in a very short space of time and at slight cost, it being found that the cost of cleansing clothes by my apparatus does not exceed three cents per dozen articles.

When it is desired to remove the cleansed clothes the inflow of steam is temporarily checked and the clothes taken out. Another batch of clothes may then be placed in the inner boiler and the steam again admitted, when the several operations will automatically proceed as before. Should it at any time be desired to discharge the water used in washing the clothes, this can readily be done by opening the cock *g*. Fresh water may be supplied, when the boilers are in position, by pouring it into the inner boiler.

By creating a vacuum below the inner boiler the downward pressure of the atmosphere at the top of the boiler will force the steam and heated air down within the same and prevent its rising. I thus dispense with a lid or cover for keeping the steam and heated air within the boiler, such a cover being a necessity in all automatic clothes-washers with which I am acquainted.

When the washer is placed upon stoves or ranges, as in my above-mentioned patent, the action of the air and steam can be regulated and water drawn through the contents of the washer at any desired force or rapidity to efficiently cleanse or bleach the clothing in the inner boiler.

What I claim as new and of my invention is—

1. In an automatic washer, the combination, with an outer boiler, of an inner boiler provided with suitable openings at or near its top and bottom, respectively, and a packing or gasket, *b*, to adapt it to be suspended vertically within and from said outer boiler, so as to leave a space between the bottoms and around the sides of said boilers within which the steam-heated water circulates and is forced upward, and a steam pipe or coil for heating and creating an upward current of water within said boilers, substantially as described.

2. In an automatic washer, the combination, with an outer boiler having a continuous regularly-shaped bottom, of an inner tub or boiler suspended within said outer boiler by a steam-tight gasket or joint at its upper portion, and having openings *c d* and tubes D, and the steam-pipes E, F, and G, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

ANDREW O'NEILL.

Witnesses:

F. P. RAYMOND,

ELI MIX.